REMARKS

The claims have not been amended.

Claim Rejections - Claims 1, 3, 5, 7, 8, 11, 14 and 17-22

Claims 1, 3, 5, 7, 8, 11, 14, and 17-22 stand rejected as obvious under 35 USC 103(a) in view of Wakimoto '635, Guha '545, and a Raychaudhuri article. The Applicants respectfully traverse this rejection.

Claim 1 requires a device structure that includes the following layers, disposed in the following order, over the organic operative layer of an opto-electronic device:

(1) an electron injection layer

(2) an organic buffer layer

(3) a conducting layer

(4) a transparent conductive oxide layer

As indicated in the specification at paras. 78-79, the applicants have found that this specific combination of layers has particularly favorable properties. Without intending to be limited as to invention works, it is believed that the favorable properties may occur because the deposition of the transparent conductive oxide alters the underlying conducting and organic buffer layers (specification, para. 79).

None of the art used to reject claim 1 discloses or suggests the unique combination taught by the applicants, nor suggests this combination and its particularly favorable properties. Rather, it took three different references to even disclose all of the layers taught by the applicants. Specifically:

Guha '545 is cited as disclosing layers (3) and (4)

- Wakimoto is cited as disclosing layers (1) and (3)

Raychaudhuri is cited as disclosing layers (2) and (3), where layer (3) is sputter deposited.

The Applicants respectfully traverse this rejection because the suggested motivation to combine is improper. Specifically, the suggested motivation that one of skill in the art would incorporate the buffer of Raychaudhuri into a conglomerate of Guha '545 and Wakimoto '635 "to protect the organic layers" is improper. In fact, Guha '545 teaches away from the suggested motivation to combine.

Raychaudhuri is cited as teaching "a layer of CuPc over the electron transport layer [that] protects the organic layers from being damaged during sputter deposition of the cathode" Office Action, page 3. But Guha '545, the only reference cited to reject claim 1 that discloses the transparent conductive oxide layer required by the claims, teaches that a "damage free deposition process" is needed for the transparent conductive oxide. Guha '545, col. 3, lines 55-67. In addition, Guha '545 teaches that a ZnSe layer can be used to protect underlying layers from damage during the deposition of a transparent conductive oxide. *Id.* One of skill in the art would therefore *not* be motivated to add the CuPc layer of Raychaudhuri to the transparent oxide layer of Guha '545 in order "to protect the organic layers" (Office Action, page 3), because Guha '545 *already has* a mechanism for protecting the underlying organic layers -- the ZnSe layer.

Moreover, Guha '545 teaches away from the suggested combination. In addition to a "Damage Free Deposition Process," Guha '545 teaches that "High Parallel and Perpendicular Conductivity" is a requirement of the device in question. Guha '545, col. 4, lines 14-15. With respect to perpendicular conductivity, Guha '545 teaches that the ZnSe film "is conducting in a direction perpendicular to the film surface" and that the series resistance of such a film in an OLED stack would be "negligible." Guha '545, col. 4, lines 22-31. There is no teaching in the prior art that the organic buffer layer in of the present invention would not

add resistance or would only add "negligible" resistance. Indeed, it is a part of the teaching of the present application that one might expect an organic buffer layer to increase operating voltage (i.e., resistance), specification, para. 29.

The present application further teaches that an expected increase in resistance due to the buffer layer may be mitigated because depositing a conductive oxide over a conductive layer, a buffer layer, and an injection layer may lead to favorable modifications of those layers, thus lowering the operating voltage. specification, para. 79. It would be impermissible hindsight to use the applicant's insight to motivate a combination of the prior art. Without this insight, one of skill in the art would expect that the suggested combination of adding the CuPc layer of Raychaudhuri to the structure of Guha '575 to significantly increase operating voltage. Even if the CuPc layer of Raychaudhuri were substituted for the ZnSe layer of Guha '545 (and such a substitution is not suggested or taught anywhere), one of skill in the art would still expect the operating voltage to increase, and would therefore be taught away from making such a substitution by Guha's teaching that a high perpendicular conductivity is a requirement.

Claims 3, 5, 7, 8, 11, 14 and 17-22 are each ultimately dependent upon claim 1, and are patentable for at least the same reasons. The Applicants silence with respect to the specific grounds for rejection of these claims does not indicate acquiesence.

Claim 2

Claim 2 stands rejected as obvious in view of the references used to reject claim 1, in further view of Jones '033. Jones '033 is cited as disclosing an injection layer of LiF on Al. This does not impact the above arguments relating to claim 1.

Claim 2 is ultimately dependent upon claim 1, and is patentable for at least the same reasons. The Applicants silence with respect to the specific grounds for rejection of this claim does not indicate acquiesence.

Claims 4 and 6

Claims 4 and 6 stand rejected as obvious in view of the references used to reject claim 1, in further view of Tanaka '734. Tanaka '734 is cited as disclosing an injection layer of alkali metal, alkali earth metal, and rare earth metal. This does not impact the above arguments relating to claim 1.

Claims 4 and 6 are ultimately dependent upon claim 1, and are patentable for at least the same reasons. The Applicants silence with respect to the specific grounds for rejection of these claims does not indicate acquiesence.

Claim 9

Claim 9 stands rejected as obvious in view of the references used to reject claim 1, in further view of a Parthasarathy article. Parthasarathy is cited as disclosing the use of BCP instead of CuPc as a buffer layer. This does not impact the above arguments relating to claim 1.

Claim 9 is ultimately dependent upon claim 1, and is patentable for at least the same reasons. The Applicants silence with respect to the specific grounds for rejection of this claim does not indicate acquiesence.

Claim 12

Claim 12 stands rejected as obvious in view of the references used to reject claim 1, in further view of Haight '838. Haight '838 is cited as disclosing a thin layer of Ca beneath an

ITO layer. This does not impact the above arguments relating to claim 1.

Claim 12 is ultimately dependent upon claim 1, and is patentable for at least the same reasons. The Applicants silence with respect to the specific grounds for rejection of this claim does not indicate acquiesence.

Claim 13

Claim 13 stands rejected as obvious in view of the references used to reject claim 1, in further view of Raychaudhuri '752. Raychaudhuri '752 is cited as disclosing an LiF/Al contact. This does not impact the above arguments relating to claim 1.

Claim 13 is ultimately dependent upon claim 1, and is patentable for at least the same reasons. The Applicants silence with respect to the specific grounds for rejection of this claim does not indicate acquiesence.

Claims 15 and 16

Claims 15 and 16 stand rejected as obvious in view of the references used to reject claim 1, in further view of Beck '364. Beck '364 is cited as disclosing that specific oxides are interchangeable. This does not impact the above arguments relating to claim 1.

Claims 15 and 16 are ultimately dependent upon claim 1, and is patentable for at least the same reasons. The Applicants silence with respect to the specific grounds for rejection of this claim does not indicate acquiesence.

Claim 23

Claim 23 stands rejected as obvious in view of the references used to reject claim 1, in further view of Jones '033. Jones '033 is cited as disclosing an LiF/Al contact. This does not impact the above arguments relating to claim 1.

Claim 23 is an independent claim, but it essentially includes all of the limitations of claim 1. Specifically, claim 23 claims an example, with specific materials, of the structure of claim 1. The arguments and combination of references used to reject claim 23 is the same as that used to reject claim 1, with the addition of Jones '033. The arguments that applicants made above with respect to claim 1 apply with equal force to claim 23, so claim 23 is patentable for at least the same reasons as claim 1. The Applicants silence with respect to the further specific arguments made regarding claim 23 does not indicate acquiesence.

Claim 24

Claim 24 stands rejected as obvious in view of the references used to reject claim 1.

Claim 24 is an independent claim, but it essentially includes all of the limitations of claim 1. Specifically, claim 24 is directed to an entire device that includes the cathode of claim 1. The arguments and combination of references used to reject claim 24 is the same as that used to reject claim 1. The arguments that applicants made above with respect to claim 1 apply with equal force to claim 24, so claim 24 is patentable for at least the same reasons as claim 1. The Applicants silence with respect to any further specific arguments made regarding claim 24 does not indicate acquiesence.

Claims 25, 27, 29, 31, 32, 35, 38 and 41

Claims 25, 27, 29, 31, 32, 35, 38 and 41 stand rejected for reasons analogous to those use to reject claims 1, 3, 5, 7, 8, 11, 14 and 22, respectively. The Applicants' arguments regarding claims 1, 3, 5, 7, 8, 11, 14 and 22 apply with equal force to claims 25, 27, 29, 31, 32, 35, 38 and 41. The Applicants respectfully request reconsideration and withdrawal of this rejection based on those arguments.

Claim 26

Claim 26 stands rejected for reasons analogous to those used to reject claim 2. The Applicants' arguments regarding claim 2 applies with equal force to claim 26. The Applicants respectfully request reconsideration and withdrawal of this rejection based on those arguments.

Claims 28 and 30

Claims 28 and 30 stand rejected for reasons analogous to those used to reject claims 4 and 6. The Applicants' arguments regarding claims 4 and 6 apply with equal force to claims 28 and 30. The Applicants respectfully request reconsideration and withdrawal of this rejection based on those arguments.

Claim 33

Claim 33 stands rejected for reasons analogous to those used to reject claim 9. The Applicants' arguments regarding claim 9 apply with equal force to claim 33. The Applicants respectfully request reconsideration and withdrawal of this rejection based on those arguments.

Claim 36

Claim 36 stands rejected for reasons analogous to those used to reject claim 12. The Applicants' arguments regarding claim 12 apply with equal force to claim 36. The Applicants respectfully request reconsideration and withdrawal of this rejection based on those arguments.

Claim 37

Claim 37 stands rejected for reasons analogous to those used to reject claim 13. The Applicants' arguments regarding claim 13 apply with equal force to claim 37. The Applicants respectfully request reconsideration and withdrawal of this rejection based on those arguments.

Claims 39 and 40

Claims 39 and 40 stand rejected for reasons analogous to those used to reject claims 15 and 16. The Applicants' arguments regarding claim 15 and 16 apply with equal force to claims 39 and 40. The Applicants respectfully request reconsideration and withdrawal of this rejection based on those arguments.

Claims 10 and 34

Claims 10 and 34 stand objected to as dependent on a rejected base claim, but allowable if rewritten in independent form.

The Applicants respectfully traverse this objection, based on the arguments above that the base claims are allowable. Applicants request reconsideration and withdrawal of this rejection.

Additional Comment re: "Transparency"

At page 4, lines 2-3 of the office action, it is asserted that "[a]n electrode defined as transparent is considered to be 100% transparent." This definition of transparent is untenable with respect to an electrode. 100% transparency only occurs in a perfect vacuum. Any material used to fabricate an electrode at any thickness is going to absorb and / or reflect some amount of light, however small. As a result, any electrode is going to have a

transparency less than 100%. Morcover, the Applicants specifically and unambiguously define the term "transparent" in the specification at para. 32.

CONCLUSION

In view of the remarks herein, reconsideration and withdrawal of all pending rejections is respectfully requested. The Office is authorized to charge any additional fees or credit any overpayments under 37 C.F.R. § 1.16 or 1.17 to Deposit Account No. 11-0600.

Respectfully submitted,

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